

Atty Dkt. No.: 10010326-2  
USSN: 09/919,555

### **REMARKS**

In view of the following remarks, the Examiner is respectfully requested to withdraw the rejections and allow Claims 1-2, 4-16, and 45-54.

### **Claim rejections under 35 U.S.C. § 102**

#### ***U.S. Application No. 09/775,387***

Claims 1, 2, 4-16, 45-46 have been provisionally rejected under 35 U.S.C. § 102(e) as being anticipated by copending Application No. 09/775,387 ('387), which is also owned by the Assignee of the present application. In view of the remarks made here, this rejection is respectfully traversed.

In maintaining the rejection, the Office Action notes the following:

While the method requires saving data in memory, the data saved is deemed non-functional descriptive material because the data does not impart functionality to the claimed method of making the array. While a method step of storing data is limiting within the method, the data stored is a mere compilation of facts. Applicant presents arguments regarding the intended use for the stored instructions/algorithms...(Office Action, pages 6 and 7) (emphasis added).

In support of this position, the Office Action cites a passage from MPEP § 2106 IV(B)1, which is directed to defining nonfunctional descriptive material.

However, the Applicants respectfully disagree that the data stored is a mere compilation of facts as categorized in the Office Action. The Applicants maintain that the array related data is not simply a compilation of facts, but instructions for selecting one or more machine readable algorithms for use by a processor on how to read the array or process data from the read array. Such instructions are data structures that comprise functional descriptive material and not merely facts concerning the arrayed moieties.

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MPEP § 2106 IV(B)(1) specifically provides:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, **"functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component.** (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

In contrast, non-functional descriptive material, as defined in the MPEP, is "material that cannot exhibit any functional interrelationship with the way in which computing processes are performed" (MPEP § 2106 IV(B)(1)(b)). Therefore, non-functional descriptive material is material that is simply read by a computing process and does not impart any affect on how the computing process is performed.

As noted in the amendment filed on May 18, 2004, the claimed invention is directed to a method of generating an addressable array of chemical moieties that includes (1) saving in a memory array related data which comprises **instructions for selecting one or more machine readable algorithms for use on how to read an array or process data from an array,** and (2) shipping the fabricated array, and forwarding the array related data to a location remote from where the array is fabricated.

Furthermore, the specification, on page 17, lines 29-31, states that the array processor retrieves the array related data and **uses the data to "either control reading of the array or to process information obtained from reading the array."** Accordingly, the array related data is more than mere facts. The array

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related data structures comprise **functional** descriptive material that has an affect on how the computing process is performed.

Moreover, the Office Action also notes that "while the method step of storing data is limiting...the data does not impart functionality to the claimed method of generating an array" (Office Action, page 6). The Applicants respectfully disagree.

With respect to functional limitations, MPEP § 2173.05(g) specifically provides the following:

A functional limitation is an attempt to define something by what it does, rather than by what it is (e.g., as evidenced by its specific structure or specific ingredients). There is nothing inherently wrong with defining some part of an invention in functional terms...A functional limitation is often used in association with an element, ingredient, or step of a process to define a particular capability or purpose that is served by the recited element, ingredient, or step. (emphasis added)

The Applicants maintain that the type of information that is saved in the memory, as recited in the claim, **defines** the step of a process for manufacturing the claimed array. In particular, the type of information that is saved into memory according to the claimed method further defines the purpose that is served by the recited element. Therefore, the type of information that is saved into memory is important and does define the array that is produced by the claimed method.

In sum, for the reasons noted above, the Applicants stress that the array related data is more than mere facts, but data structures that comprise functional descriptive material. In addition, the type of information that is saved into memory does impart functionality to the claimed method of generating an array. With these principles in mind, the claimed invention is discussed with respect to the cited references.

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The Office Action states that the copending '387 application discloses saving in memory array related data comprising machine readable instructions for reading the array and/or instructions for processing the array (Office Action, page 3). However, in references to the machine-readable information, the '387 specification states the following:

For each fabricated array 12, processor 140 will generate a corresponding unique identifier and will save (430) this in memory 141 in association with the following (together forming a first set of feature characteristic data 440): target array layout information (including the location and identity of biopolymers at each feature); quality control data (obtained in step 420); and biological function data (434). ('387 Specification ¶ 0040) (emphasis added)

Accordingly, the copending '387 application is directed to a method of using an addressable array that comprises machine-readable information on the array layout, the quality control of the array layout, and the biological function information. Moreover, such data includes information on the function of the target or its complement, or the gene from which they originated ('387 Specification ¶ 0039). In addition, the '387 application provides that "biopolymer identification information" is retrieved and used by the processor during reading of the array ('387 Specification ¶ 0043-0044). For example, the specification provides that if the data indicates that "a particular feature is missing or severely defective then the scanner may simply avoid reading such a feature at all" ('387 Specification ¶ 0044).

The claimed invention includes a step of saving into memory **instructions to the processor for selecting one or more machine readable algorithms** on how to read and process data from a read array— not simply biological function information for the arrayed biopolymers. As such, the substance of the information saved in memory for the claimed invention is clearly different than the biological function information of the '387 application.

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Since the '387 application discloses the use of "biological function information," such as array layout information, rather than instructions for selecting one or more machine readable algorithms for use by a processor on how to read an array or how to process data from a read array, the cited application fails to disclose every element found in the claims of the present invention. As such, Claims 1, 2, 4-16, and 45-46 are not anticipated under 35 U.S.C. § 102(e) by the '387 application. Therefore, the Applicants respectfully request that this rejection be withdrawn.

***U.S. Patent No. 6,180,351***

In addition, Claims 1, 2, and 4-16 have been rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,180,351 ('351) to Cattell, which is also owned by the Assignee of the present application. In view of the remarks made herein, this rejection is respectfully traversed.

The '351 patent discloses addressable array of chemical moieties wherein the array includes array layout information, which information "refers to one or more characteristics of the array, such as feature positioning, feature size, and some indication of a moiety at a given location" (Column 6, lines 65-67).

In contrast, that which is saved to memory according to the present application is "instructions for selecting one or more machine readable algorithms for use by a processor on how to read an array or machine readable algorithms for use by a processor on how to process data from an array following reading of the array."

Accordingly, the substance of the identifier of the '351 patent is clearly different than machine readable instructions of the claimed invention because the '351 identifier provides layout information that is used by the processor in reading the array, but **not positive instructions for the processor on how to read the array or process data from the array.**

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As noted above, the array related data of the claimed invention is more than mere facts, but instead, data structures that comprise functional descriptive material. Moreover, as previously noted the type of information that is saved into memory does impart functionality to the claimed method of generating an array.

In order for a cited reference to anticipate the claimed invention, the reference must disclose each and every element of the claimed invention. Since '351 fails to recite the element of Instructions for selecting one or more machine readable algorithms for use by a processor on how to read an array or how to process data from a read array, the cited patent fails to disclose every element found in the Independent claims of the present invention. As such, Claims 1, 2, and 4-16 are not anticipated under 35 U.S.C. § 102(e) by the '351 patent. Accordingly, the Applicants respectfully request that this rejection be withdrawn.

**Claim rejections under 35 U.S.C. § 103**

***Claims 1, 2, and 4-16***

Claims 1, 2, and 4-16 have been rejected under 35 U.S.C. § 103 as being unpatentable over Perttunen (U.S. Patent No. 5,968,728), in view of Ellison (U.S. Patent Application No. 2002/0086319A1, filed Nov. 13, 2000). In view of the remarks made herein, this rejection is respectfully traversed.

The present invention is directed to methods of generating arrays of chemical moieties by depositing the moieties onto regions of a substrate, saving in memory array related data which is made up of "instructions for selecting one or more machine readable algorithms for use by a processor on how to read an array or machine readable algorithms for use by a processor on how to process data from an array following reading of the array," and shipping the fabricated array to a location remote from where the array was fabricated.

As noted above, the array related data of the claimed invention is more than mere facts, but instead, data structures that comprise functional descriptive material.

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Moreover, as previously noted, the type of information that is saved into memory does impart functionality to the claimed method of generating an array.

The law is clear that to establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. In re Fine, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 21 USPQ2d 1941 (Fed. Cir. 1992). Second, there must be a reasonable expectation of success. In re Merck & Co., Inc., 231 USPQ 375 (Fed. Cir. 1986). Finally, the prior art reference, or references when combined, must teach or suggest all the claim limitations. In re Royka, 180 USPQ 580 (CCPA 1974).

As noted in the amendment filed on May 18, 2004, the disclosure of Perttunen is limited to a method of generating an addressable array, wherein the arrays include instructions for reading the array or instructions for processing the array saved in memory, which consists of mapping information corresponding to the arrayed molecules. Specifically, with respect to the instructions associated with the disclosed arrays the specification states the following:

A data writing device 37 receives a signal associated with the mapping from the processor 30. The data writing device 37 writes data associated with the mapping directly to the support member 36 or to another member associated with the support member 36. The data can include data which indicates or encodes the mapping, and/or data which identifies the mapping. Examples of the data writing device 37 include, but are not limited to: (i) a magnetic writing head to write magnetic data to a magnetic storage medium; (ii) a printing device to write printed data to a substrate; (iii) an electronic writing device to write electronic data to an electronic storage device such as a memory; and (iv) an optical writing device to write optical data to an optical storage medium. (column 4, lines 61 through column 5, line 7) (emphasis added)

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Accordingly, the machine-readable information disclosed in Perttunen is array mapping information.

The Office Action maintains that Perttunen specifically teaches that the array related data comprises machine-readable instructions for "directing operation of the system" (Office Action page 16, citing Perttunen Column 3, lines 54-67). However, the cited passage refers to the processor (item 30 of Figure 2, which is a block diagram of an embodiment of a system for forming a molecular detection device), which receives instructions for generating the mapping and directs the system which fabricates the arrays. The instructions referred to in the passage are different than the information written on the array, which are discussed in column 4, lines 61-67, and the system referred to in the passage is different than a processor that reads an array and processes data from a read array. Therefore, nowhere does Perttunen teach that the array mapping information can direct a processor in reading an array or processing data from a read array.

Accordingly, in addition to not teaching shipping of the fabricated array to a remote location, Perttunen is also deficient in that it fails to disclose, teach or fairly suggest another element of the claimed invention – instructions for selecting one or more machine readable algorithms for use by a processor on how to read an array or how to process data from a read array. Specifically, the substance of the information saved in memory of Perttunen is simply array mapping information, i.e., the identification of each moiety and its specific location on the array. In contrast, the information saved in memory of the claimed invention of present application consists of instructions for selecting one or more machine readable algorithms for use by the processor on how to read an array or how to process data from a read array. Clearly, the substance of the information of the claimed invention is considerably different than that of Perttunen.

The Office Action also cites Ellson as teaching shipping the fabricated arrays to end users. Specifically, the Examiner states that Ellson teaches a method for generating an addressable array of chemical moieties comprising depositing

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moieties onto different regions of the substrate, saving in a memory array related data and shipping the array to a remote location. However, the Applicants stress that the disclosure of Ellson is limited to an array of molecular moieties on a substrate, where the substrate also contains machine-readable information, which includes shipping and billing information, the identity of the molecular moieties, information relating to the means by which the moieties were attached to the substrate, and suggested storage conditions relating to the molecular moieties (see specification, ¶ 0052). Therefore, Ellson also fails to teach or suggest the use of machine readable instructions for use by a processor on how to read an array or how to process data from a read array.

Clearly, the substance of the information provided with the arrays of Perttunen and Ellson is not the same as that of the claimed invention. The proposed claim amendments clarify that the information saved in memory is instructions for selecting one or more machine readable algorithms for use by the processor on how to read the array or how to process information from a read array. Accordingly, the array related information of the claimed invention is more than simply billing/shipping information and array mapping information. Therefore, Ellson fails to meet the deficiency of Perttunen.

As such, Perttunen and Ellson taken alone or in any combination, fail to teach at least one element of the claimed invention – instructions for selecting one or more machine readable algorithms for use by a processor on how to read an array or how to process data from a read array. Since the cited references fail to teach an element of the rejected claims, the cited references fail to render the claimed invention obvious.

As such, claims 1, 2, and 4-16 are not rendered obvious under 35 U.S.C. § 103 by Perttunen in view of Ellson. Therefore, the Applicants respectfully request that this rejection be withdrawn.

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***Claims 45 and 46***

Claims 45 and 46 have been rejected under 35 U.S.C. § 103 as being unpatentable over Perttunen in view of Ellson, and further in view of Zelany (U.S. Patent No. 6,215,894). These rejections are respectfully traversed.

As detailed above, Perttunen and Ellson taken alone or in any combination, fail to teach at least one element of the claimed invention – Instructions for selecting one or more machine readable algorithms for use by a processor on how to read an array or how to process data from a read array. Since Zelany is cited solely for its disclosure of including data on the presence or absence of a control probe, the cited combination still fails to make up the deficiency of the substance of the machine readable instructions of the claimed invention. As noted above, the machine readable information of the claimed invention are more than mere billing/shipping information and array mapping information; it includes Instructions for selecting one or more machine readable algorithms for use by a processor on how to read an array or how to process data from a read array.

As noted above, the array related data of the claimed invention is more than mere facts, but instead, data structures that comprise functional descriptive material. Moreover, as previously noted the type of information that is saved into memory does impart functionality to the claimed method of generating an array.

Therefore, since the cited combination of references still fails to teach an element of the rejected claims, they fail to render the claimed invention obvious. As such, the Applicants respectfully request that the rejection of claims 45 and 46 under 35 U.S.C. § 103 be withdrawn.

**Obviousness-Type Double Patenting Rejection**

***U.S. Patent No. 6,180,351***

Claims 1, 2, and 4-16 have been provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over

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claims 1-19 of U.S. Pat. No. 6,180,351. In view of the remarks made herein, this rejection is respectfully traversed.

As discussed in further detail above, the '351 patent is directed to a method of generating an addressable array of biopolymers and saving in memory a machine readable array layout information, which "refers to one or more characteristics of the array, such as feature positioning, feature size, and some indication of a moiety at a given location" (Column 6, lines 65-67).

In contrast, information saved to a memory according to the present application is "instructions for selecting one or more machine readable algorithms for use by a processor on how to read an array or machine readable algorithms for use by a processor on how to process data from an array following reading of the array." As discussed in detail above, these instructions are different from the array layout information disclosed in the '351 patent. Therefore, the substance of the information saved in memory of the '351 patent is clearly different than the instructions of the claimed invention, thereby rendering the claimed invention patentably distinct from the '351 patent.

As noted above, the array related data of the claimed invention is more than mere facts, but instead, data structures that comprise functional descriptive material. Moreover, as previously noted the type of information that is saved into memory does impart functionality to the claimed method of generating an array.

Since the claims of the present application and that of the '351 patent are patentably distinct, the Applicants respectfully request that this rejection be withdrawn.

***U.S. Application No. 09/775,387***

Claims 10 and 13-16 have been provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 21-24 of copending Application No. 09/775,387. In view of the remarks made herein, this rejection is respectfully traversed.

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The copending '387 application is directed to a method of using an addressable array that comprises machine readable information on the array layout, the quality control of the array layout, and the biological function information and retrieving biological function data for the biopolymers from a memory and using such biological function data in reading the array or processing results from the read array ('387 Specification ¶0039). Moreover, the '387 application refers to the biological function data as information on the function of the target or its complement, or the gene from which they originated ('387 Specification ¶ 0039).

In contrast, Claim 10 of the present application is directed to a method of generating an addressable array of chemical moieties that includes saving into memory array related data which includes instructions for selecting one or more machine readable algorithms for use in reading an array or algorithms for use in processing data from a read array. These instructions are clearly different from the "identity of the biopolymers" saved to a memory of Claim 21 of the '387 application. Therefore, the substance of the information saved in memory of the '351 patent is clearly different then the array related data of the claimed invention, thereby rendering claims 10 and 13 of the present application patentably distinct from claims 21-24 of the '387 application.

As noted above, the array related data of the claimed invention is more than mere facts, but instead, data structures that comprise functional descriptive material. Moreover, as previously noted the type of information that is saved into memory does impart functionality to the claimed method of generating an array.

Since the claims of the present application and that of the '387 Application are patentably distinct, the Applicants respectfully request that this rejection be withdrawn.

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**CONCLUSION**

The Applicants respectfully submit that all of the claims are in condition for allowance, which action is requested. If the Examiner finds that a telephone conference would expedite the prosecution of this application, please telephone Gordon Stewart at (650) 485-2386. The Commissioner is hereby authorized to charge any fees which may be required by this paper, or to credit any overpayment, to Deposit Account No. 50-1078.

Respectfully submitted,

Date: November 10, 2004

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